

28 April 2004

To: Co Secretariats OIML TC9/SC1

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Thank you for the opportunity to respond and comment on the OIML TC9/SC1 Version 15 December 2003 Working Draft (WD) revision of OIML R 76 Non-automatic Weighing Instruments Part 1: Metrological and Technical requirements-tests. We recognize and appreciate the magnitude of the task you have assumed.

The following attached table includes the U.S. responses and comments to the proposals in the WD.

Please note that:

- All TC9/SC1 changes to R 76-1 (1992) in the WD revision dated 15 December 2003 are in red and underlined text.
- ~~Strike out blue text~~ indicates U.S. recommended deletions to the WD.
- U.S. recommended additions to the WD are indicated by blue double underlined text.

A meeting of the Scale Manufacturers Association (SMA) coincides with the date that responses are due to the Secretariats. Since it is likely that there may be additional industry input on the WD as a result of SMA's deliberations, I anticipate that there may be additional U.S. comments and suggestions. I will make every effort to make sure you receive any additional U.S. comments and suggestions by the end of May 2004.

Please let me know if you have any questions or request additional clarifications on the U.S. responses to the WD.

Sincerely,

Steven E. Cook

Cc: Henry Oppermann (NIST)  
Chuck Ehrlich (NIST)  
Tina Butcher (NIST)  
U.S. National Working Group  
Scale Manufacturers Association

Attachment

Working Draft Revision of R 76 Non-automatic Weighing Instruments U.S. Comments and Suggestions	
Paragraph	Comments/Suggested language
T.1.2	<p>There appears to be a conflict with the first sentence that states that a non-automatic weighing instrument “requires the intervention of an operator during the weighing process <u>to determine the weighing result</u>” and the last statement which states that a “non-automatic weighing instrument may be self-indicating.” The term “self-indicating” may be misinterpreted as being synonymous with “determine.”</p> <p>The U.S. believes that the phrase “<u>to determine the weighing result, or</u>” is unnecessary and recommends that it be deleted in T.1.2. as follows:</p> <p style="padding-left: 40px;">T.1.2 Non-automatic weighing instrument</p> <p style="padding-left: 40px;">Instrument that requires the intervention of an operator during the weighing process <u>to determine the weighing result or to decide that the weighing result is acceptable.</u></p>
T.1.2.11	The U.S. requests clarification of the term “similar utensil” in the definition of a mobile instrument.
T.2.2.2	<p>There are many indicators that do not perform the analogue-to-digital conversion of the output signal to display the weighing results in units of mass. Indicators may receive digital input from digital load cells or from separable modules that perform the analogue-to-digital conversion.</p> <p>The U.S. recommends amending the proposed definition for terminology in paragraph T.2.2.2 Indicator as follows:</p> <p style="padding-left: 40px;"><u>Electronic device of an instrument that may perform the analogue-to-digital conversion of the output signal of the load cell, and further processes the data, and displays the weighing result in units of mass.</u></p>
T.2.3.2	<p>The term “matrix” in the example of an electronic sub-assembly may be limiting.</p> <p>The U.S. recommends deleting the term “matrix” as follows:</p> <p style="padding-left: 40px;">Examples: A/D converter, display <del>matrix</del></p>
T.3.2.6	<p>U.S. manufacturers have reported there has been confusion among regulators and type evaluation laboratories regarding the different requirements applicable to multi-interval and multiple range instruments. This is due to the use of the term “range” in the definitions for both multi-interval and multiple range instruments. A multiple range instrument is one with two or more ranges. A multi-interval instrument has more than one minimum interval in a single range.</p> <p>The U.S. believes that it is technically incorrect to infer that a multi-interval instrument has more than one range since the definition of multi-interval instrument includes the phrase “. . . each with different scale intervals, with the weighing range determined automatically according. . .”.</p> <p>The U.S. recommends that the definition for a multi-interval instrument be amended as follows:</p> <p style="padding-left: 40px;">T.3.2.6. Multi-interval instrument</p> <p style="padding-left: 40px;">Instrument having one weighing range which is divided into partial weighing <del>ranges</del> <u>segments</u>, each with different scale intervals, with the weighing <del>range segment</del> <u>segment</u> determined automatically according to the load applied, both on increasing and decreasing loads</p>
2.5	<p>The U.S. requests clarification whether or not the section on “Terminology” is a “chapter” or a “clause.” The inclusion of the title for the clause/chapter would be helpful to readers who are not familiar with the format of clauses and chapters in the recommendation. The U.S. recommends the language in paragraph 2.5. be amended as follows:</p> <p style="padding-left: 40px;">The terminology given in <u>chapter T Terminology</u> shall be considered as <u>a binding</u> part of this Recommendation.</p>

Working Draft Revision of R 76 Non-automatic Weighing Instruments U.S. Comments and Suggestions	
Paragraph	Comments/Suggested language
3.5 (*) footnote	While R 76 generally agrees with U.S. requirements, the footnote (*) should be elevated to formal status.
3.6.3	“de-vice(s)” should be not be hyphenated.
3.7.2	“de-vice(s)” should be not be hyphenated.
3.8.2.2	<p>The U.S. recommends that the term “initial” should be deleted for clarity as follows:</p> <p style="text-align: center;">An additional load equal to 1.4 times the actual scale interval, when gently placed on or withdrawn from the instrument at equilibrium shall change the <del>initial</del> indication. <u>This applies only to type examination and to instruments with <math>d \geq 5</math> mg.</u></p>
3.9.1.1	<p>The U.S. requests clarification regarding the proposing amendment to the first sentence in 3.9.1.1 Tilting. We interpret the existing requirements to mean that tilting test are conducted in according to the following diagrams:</p> <div style="text-align: center;"> <span style="margin: 0 10px;">or</span> </div> <p>By adding changing “or” to “<u>and</u>”, it appears that the number of tilting test are nearly doubled.</p> <p>The U.S. is concerned that there is no added benefit to testing for the effect of tilt in all eight directions.</p>
3.9.1.1 a. Note.	<p>An additional marking pointing to the location of a level indicator is unnecessary and provides little benefit to the customer, makes it difficult for a manufacturer to comply, and may be in conflict with sanitation requirements. The maintenance of the level condition is the responsibility of an instrument operator trained and knowledgeable in the operation of the instrument. Location on the level indicator should be part of these operating instructions. The location on the level indicator should also be defined in the R 76-2 report form and certificate.</p> <p>The U.S. recommends that 3.9.1.1 a. Note be amended as follows:</p> <p><u>Note: If technical reasons allow the level indicator to be fixed only in a "hidden" place (e.g., below the load receptor) this can be accepted if the level indicator is easily accessible to the user without tools, and if there is a legible notice provided on the instrument in a clearly visible place that points the user to the level indicator, or its location is defined in the operation manual, the OIML Certificate and OIML Test Report.</u></p>
3.9.3	<p>This paragraph indicates that a battery-operated instrument should be tested with an input voltage of +20%. U.S. manufacturers have reported that some instruments may be damaged if tested up to the proposed limit.</p> <p>The U.S. is not aware of the justification for the proposed of 20% upper limit for DC operated instruments and recommends that the upper limit for battery-operated instruments be the same as instruments with a main power supply.</p>

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3.9.4.2	<p>The third paragraph infers that the automatic zero tracking device is disabled since it states that a multiple range instrument must maintain the “near zero” indication for 5 minutes after removing a load greater than <math>Max_1</math>.</p> <p>The U.S. recommends that the following language be added to paragraph 3.9.4.2 as follows:</p> <p style="padding-left: 40px;">3.9.4.2 The deviation on returning to zero as soon as the indication has stabilized, after the removal of any load which has remained on the instrument for one half hour, shall not exceed <math>0.5 e</math>.</p> <p style="padding-left: 40px;">For a multi-interval instrument, the deviation shall not exceed <math>0.5 e_1</math></p> <p style="padding-left: 40px;">On a multiple range instrument, the deviation on returning to zero from <math>Max_i</math> shall not exceed <math>0.5 e_i</math> Furthermore, after returning to zero from any load greater than <math>Max_1</math> and immediately after switching to the lowest weighing range, the indication near zero shall not vary by more than <math>e_1</math> during the following 5 minutes.</p> <p style="padding-left: 40px;"><u>This requirement assumes that the zero-tracking device, if provided, is not in operation.</u></p>
3.10.2.1	<p>In the third paragraph, indicated by the first hyphen, the term “digital” is ambiguous. Because of this, the application of the apportioned error may be incorrect because the module may have analogue components with digital outputs.</p> <p>The U.S. recommends adding “purely,” as in paragraph 3.10.2.2, as follows:</p> <p style="padding-left: 40px;">The fraction <math>p_i</math> shall be chosen by the manufacturer of the module and shall be verified by an appropriate test, <u>taking into account the following conditions:</u></p> <p style="padding-left: 40px;"><u>- For purely digital devices <math>p_i</math> may be equal to 0.</u></p>
3.10.4.2	<p>The second and third bulleted items indicated by a hyphen contain the term “normally.” The U.S. is concerned that “normally” is a very subjective word and recommends that it be removed from both sentences.</p>
4.1.2.4 b.	<p>The paragraph states that the serial number (or other identification of the instrument) shall also be included in the medium that also contains the event counter.</p> <p>The U.S. believes that storing the serial number in the medium that stores the event counter data is not necessary for instruments where the event counter data is stored within the instrument. Where event counter data is not stored or contained within the instrument, the acceptable solution should allow for other forms of identification sufficient to identify the specific instrument location. The requirement should also state that the data for preset controls is not to be confused with the long-term storage of legally relevant data in 5.3.5. Data Storage Devices (DSD).</p>
4.1.2.6	<p>“de-vice(s)” should be not be hyphenated.</p>
4.2.3	<p>The last sentence in 4.2.3 states that indications significantly below zero are not permitted unless a tare device is in operation. The U.S. is concerned that the term “significantly” is very subjective. Additionally, the only acceptable exception in the proposed language is for instruments with tare devices in operation.</p> <p>If the proposed requirement is intended for self-indicating mechanical instruments, the requirement should allow for the use of electronic instruments that have a clear and unambiguous gross weight identifier.</p> <p>The U.S. recommends that the last sentence in 4.2.3 be deleted.</p>
4.4.2	<p>There is a “.” missing after the first bulleted item indicated by a hyphen.</p>

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4.11.5	<p>The U.S. supports the concept of selectable weighing modes however,</p> <ul style="list-style-type: none"> <li>- we have concerns with the statement that the instrument can be switched back to the normal weighing mode “at any time”;</li> <li>- the automatic selection of a mode may not be suitable in all instances and additional guidelines should be provided regarding the manual or automatic selection of modes; and</li> <li>- the list of examples for weighing modes and weighing mode inoperative should include additional examples of instrument functions such as preset tare setting, calibration, configuration, and temporary automatic partial power and or display shutdown mode to conserve battery power or prevent damage to the display in periods on non-use.</li> </ul> <p>For example, the operator should not be able to select a combination of platforms from a single platform mode unless the additional platforms are at a gross zero-balance condition. In another example, the zero integrity of the instrument must be protected when automatically switching from an inoperative weighing mode to a normal weighing mode.</p> <p>The U.S. also requests clarification that some functions such as preset tare determinations and other statistics may be conducted in the normal weighing mode provided that these functions do not interfere with the “real time” indications of mass and, if applicable, unit price and price to pay.</p> <p>The U.S. recommends that language be added to state that if a continuous zero indication is not provided in the “weighing mode not in operation,” an effective means shall be provided to inhibit a weighing operation or to return to the normal weighing mode when the instrument is in an out-of-balance condition.</p>
4.13.11	<p>The U.S. agrees with the intent of the proposed language and suggests that the last sentence be reworded as follows:</p> <p style="color: red;"><u>If a price-computing scale is used as a self-service instrument <del>one</del>, then the requirements in 4.14 must be met<del>too</del>.</u></p>
5	<p>The U.S. requests that references to the clauses could be titled for the benefit of readers that may not be familiar with the term “clause” as used in this recommendation as follows:</p> <p style="padding-left: 40px;">In addition to clauses 3 <a href="#">Metrological Requirements</a> and 4 <a href="#">Technical Requirements for a Self- or Semi-indicating Instruments</a>, an electronic instrument shall comply with the following requirements.</p>
5.5.1	<p>U.S. manufacturers have reported that modern weighing instruments include the use of flash technology in which software can be modified and uploaded. The proposed language in 5.5.1 appears to prohibit existing technology that is frequently used to update their products.</p> <p>Additionally, the U.S. is concerned with the last sentence in this section that states, “The software identification shall be easily provided by the instrument.” The use of the term “easily” is too subjective.</p> <p>The U.S. recommends that the last sentence be amended as follows:</p> <p style="color: red;"><u>The software identification shall be <del>easily</del> provided by the instrument and listed in the OIML certificate.</u></p> <p><u>Acceptable solutions may include one or more of the following:</u></p> <ul style="list-style-type: none"> <li>- <u>A clearly identified operation of a physical or soft key, button, or switch.</u></li> <li>- <u>Continuously displayed software identification.</u></li> <li>- <u>Software identification displayed during the cycling of power to the instrument.</u></li> <li>- <u>Clear instructions viewing the software identification marked on or displayed by the instrument.</u></li> </ul>

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5.5.2	<p>U.S. manufacturers have stated that many of their instruments incorporate several components such as mother boards, interfaces, memory, etc., that are common with personal computers and request that this section be clarified to recognize this practice. Additionally, they request clarification regarding the types of software subject to this section (metrologically significant, legally relevant, and software used in communication, interface, device driver, etc.).</p> <p>The U.S. offers the following amendments to the proposed section as follows:</p> <p><u>5.5.2 Personal computers, instruments with PC components, and other instruments, devices, modules, and elements with programmable or loadable metrologically significant and/or legally relevant software.</u></p> <p><u>Personal computers and other instruments/devices with programmable or loadable software may be used as indicators, terminals, point-of-sale devices (POS), data-storage devices or peripheral devices if the following additional requirements are met:</u></p> <p><u>Note: Although these devices may be complete weighing instruments with loadable software or PC-based modules and components, etc. they will in the following simply be called "PC".</u></p>
5.5.3	<p>The U.S. requests that the term “legally relevant data” be defined in this document. Additionally, guidelines should be supplied or applications identified where “legally relevant data” may be required. For example, storage of legally relevant data is required where transactions are invoiced (customer is issued a statement for payment based upon the transaction) at a later date, when the customer is not present for the determination of the amount, or for special applications identified and legislated by the state.</p> <p>The data for preset controls (calibration and configuration) should be distinguished from legally relevant data since there is no need to reconstruct transactions for instruments that store data for preset controls.</p> <p>The U.S. also requests that data storage devices (DSDs) be identified as a feature, option, or parameter on OIML certificates if they are incorporated in the instruments.</p>
6.6.1.1	<p>U.S. manufacturers have reported that R 76 can be interpreted to require either notches <u>or</u> graduations for scale (graduation) mark. The U.S. requirements permit notches, or marks, or a combination of notches and marks.</p> <p>The U.S. recommends that 6.6.1.1. be amended to provide uniform application of the requirement as follows:</p> <p>6.6.1.1. Scale Marks The scale marks shall be lines or notches, <u>a combination of both</u>, or on the flat of the graduated shank.</p>
6.3.2	<p>Both the U.S. and R 76 6.2.2.5 require that it be possible to secure poise parts that are detachable; however, the U.S. has a requirement that knives be hard and sharp, etc. R.76 6.3.2. Hardness has a similar requirement, however it is directed more to the lever knives and is silent with respect to poise knives.</p> <p>The U.S. recommends that 6.3.2. be amended as follows:</p> <p>6.3.3 Hardness Contact parts of knives, bearings, friction plates, <u>sliding poise devices</u>, interlevers, interlever supports and links shall have a hardness of at least 58 Rockwell C.</p>

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7.1.4	<p>There appears to be typographical errors in the last sentence of the first paragraph in 7.1.4. The sentence should read:</p> <p style="padding-left: 40px;">7.1.4. Presentation of descriptive markings</p> <p style="padding-left: 40px;">The descriptive markings shall be indelible and of a size, shape and clarity allowing easy reading.</p> <p style="padding-left: 40px;">They shall be grouped in one or two clearly visible places either on a plate or sticker fixed permanently to the instrument, or on a non-removable part of the instrument itself. <u>In case of a plate or sticker which is not destroyed when removed, a means of securing shall be provided, e.g. a control mark that can be applied.</u></p> <p>The above-proposed statement and similar statements a few lines down and in “c) Fixing” should be consistent.</p> <p style="padding-left: 40px;">It shall be possible to seal the plate bearing the descriptive markings unless its removal will result in its destruction. If the data plate is sealed, it shall be possible to apply a control mark to it.</p> <p style="padding-left: 40px;">c) Fixing. . . The plate may be glued or consist of a transfer provided its removal results in its destruction.</p> <p>The U.S. requests clarification in the second paragraph, second sentence. What kind of “<u>evidence</u>” is acceptable, and what is meant by the term “<u>intervention</u>”?</p> <p>The U.S. suggests that the acceptable solution in “b) Dimensions” is not needed and can be removed.</p>



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7.2.1	<p>The U.S. recommends that 7.2.1. be amended as follows:</p> <p>An instrument shall have a place for the application of verification marks.</p> <p>This place shall:</p> <ul style="list-style-type: none"> <li>- be such that the part on which it is located cannot be removed from the instrument without damaging the marks,</li> <li>- allow easy application of the marks without changing the metrological qualities of the instrument,</li> <li>- <b>normally</b> be visible without the instrument having to be moved when it is in service.</li> </ul> <p><b>Note:</b> If technical reasons <del>allow-restrict or limit</del> the verification mark(s) to be fixed only in a “hidden” place (e.g. when an instrument– in combination with a POS device- is integrated in <del>another</del> equipment) this can be accepted if these marks are easily accessible to the user without tools, and if there is a legible notice provided on the instrument in a clearly visible place that points the user to these marks, <u>or if its location is defined in the operation manual, the OIML Certificate and OIML Test Report.</u></p> <ul style="list-style-type: none"> <li>- be appropriate in size <b>depending on</b> national requirements.</li> </ul> <p><b>Acceptable solution:</b></p> <p>An instrument required to bear verification marks shall have a verification mark support, at the place provided for above, which ensures the conservation of the marks:</p> <p>a) when the mark is made with a stamp, this support may consist of a strip of lead or any other material with <b>qualities similar to lead</b> (<i>Clarification requested. e.g. like plastic, brass, etc?</i>), inserted into a plate fixed to the instrument, or a cavity bored in the instrument.</p> <p>b) when the mark is of the self-adhesive type, a space shall be provided on the instrument for the application of this mark.</p> <p>For application of the verification marks a stamping area of at least 200 mm<sup>2</sup> is required.</p> <p>If <b>self-adhesive stickers</b> are used as verification marks, the space for these <u>stickers</u> shall have a diameter of at least 25 mm. <b>These marks shall be adequately durable for the intended use of the instrument, e.g., by means of a suitable protection.</b></p>
8.2.1	<p>The U.S. recommends that photographs shall also be kept confidential by the approving authority. U.S. manufacturers report that they frequently submit instruments for type evaluation before design (appearance) patents have been filed and believe that the appearance should be confidential.</p> <p>The U.S. recommends that 8.2.1 Application for type approval be amended as follows:</p> <p>The application for type approval shall include the submission to the approving authority of normally one instrument representative of the submitted type. <u>The modular approach as per chapter 3.10.2 may be more appropriate and efficient.</u></p> <p>The <u>applicant shall provide the</u> following information and documents <del>shall be provided by the applicant</del>, as far as applicable.</p> <p>.</p> <p>.</p> <p>.</p> <p><u>All documents of the weighing instrument documents, including with the exception of the photo (no. 11) shall be kept confidential by the approving authority.</u></p>



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8.3	<p>The U.S. recommends removing the gender specific references and amend 8.3. Initial verification as follows:</p> <p>8.3 Initial verification</p> <p><u>Initial verification may be performed by authorised national bodies or by the manufacturer <del>itself</del> himself provided that, — according to national rules, — <del>his</del> the quality system for production is acknowledged for this task.</u></p> <p>Initial verification shall not be performed unless conformity of the instrument to the approved type and/or the requirements of this Recommendation is established under the responsibility of <u>an authorized body</u>. The instrument shall be tested at the time of installation and ready for use, unless it can be readily shipped and installed after initial verification.</p> <p><u>Initial verification may be carried out at the manufacturer's <del>facility works</del> or any other location;</u></p> <ol style="list-style-type: none"> <li><u>1) if transport to the place of use does not require dismantling of the instrument,</u></li> <li><u>2) if the taking <del>or putting</del> into service at the place of use does not require assembly of the instrument, or other technical installation work likely to affect the instrument's performance, and</u></li> <li><u>3) if the gravity value at the place of putting into service is taken into consideration or if the instrument's performance is insensitive to gravity variations.</u></li> </ol> <p><u>In all other cases, <del>the tests they</del> shall be carried out at the place of use of the instrument.</u></p>